Operation IceBridge

The NASA IceBridge Crew

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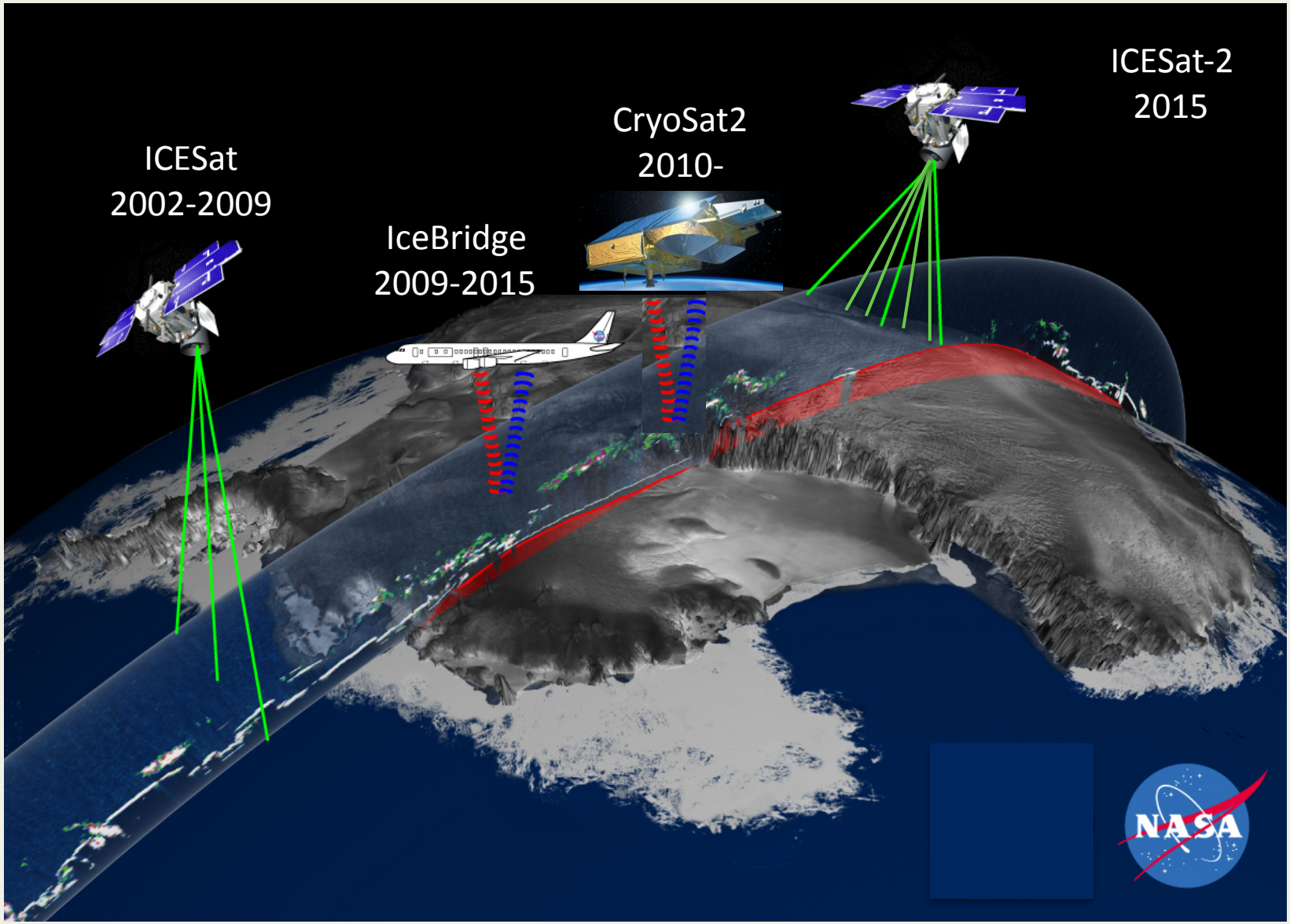
IceBridge


ICESat
2002-2009
IceBridge
2009-2015
CryoSat2
2010-
ICESat-2
2015

Outline

Science Obejctives

Operation IceBridge will bridge the data gap between ICESat-1 and ICESat-2 using NASA aircraft.

Campaigns completed:

Arctic 2009

Antarctic 2009

Arctic 2010

Instruments on board:

ATM-Laser altimeter/ GSFC

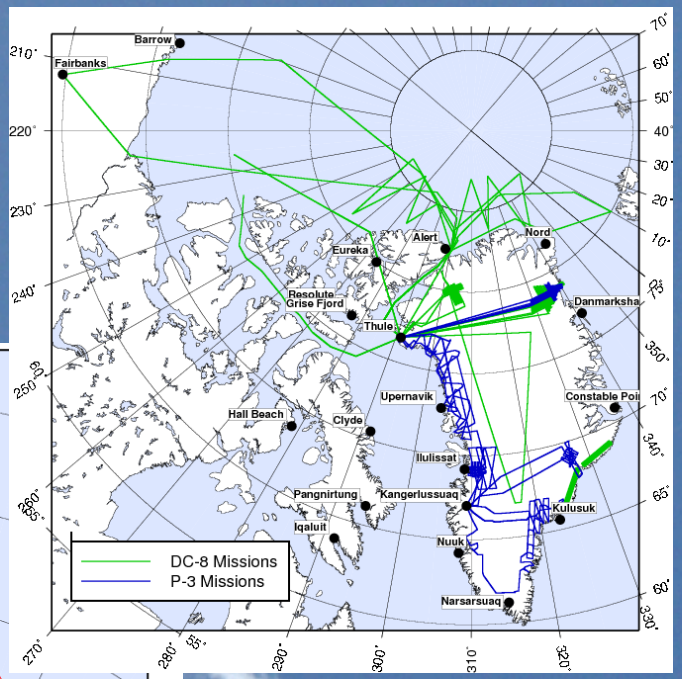
LVIS-Laser altimeter/GSFC

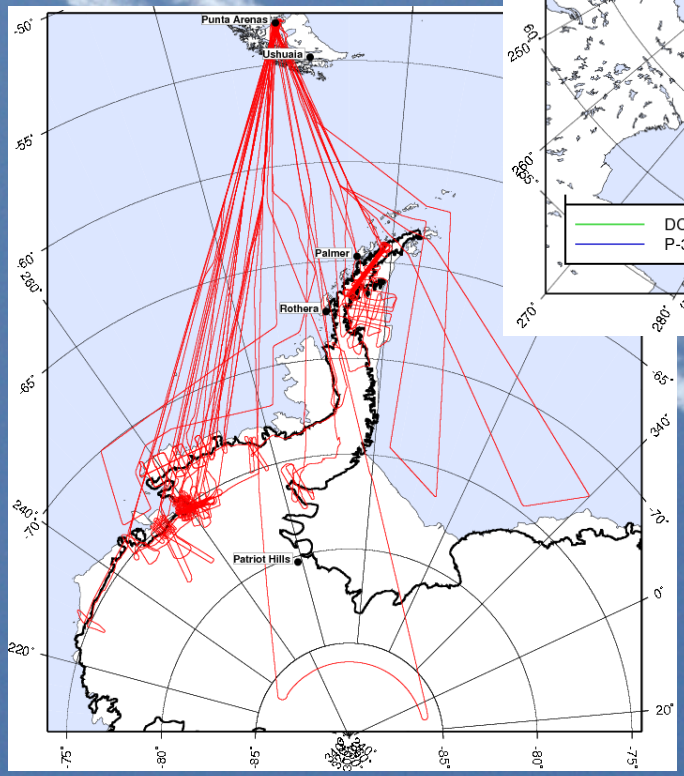
CReSIS Radar Suite/ U. Kansas

- •Ku band altimeter
- •Snow radar
- •Accumulation radar
- •MCoRDS depth sounding radar

Gravimeter/ LDEO

DMS-High res camera/ARC





Website: www.nasa.gov/icebridge

Science Objectives

1) Make airborne laser altimetry measurements over the ice sheets and sea ice to fill in the data gap between ICESat and the launch of ICESat-2 planned for 2015.

2) Link measurements made by ICESat, ICESat-2, and CryoSat-2 to allow their comparison and the production of a long-term, ice sheet altimetry record.

3) Use airborne altimetry and radar to monitor key, rapidly changing areas of ice, including sea ice, ice sheets and glaciers, in the Arctic and Antarctic to maintain a long term observation record.

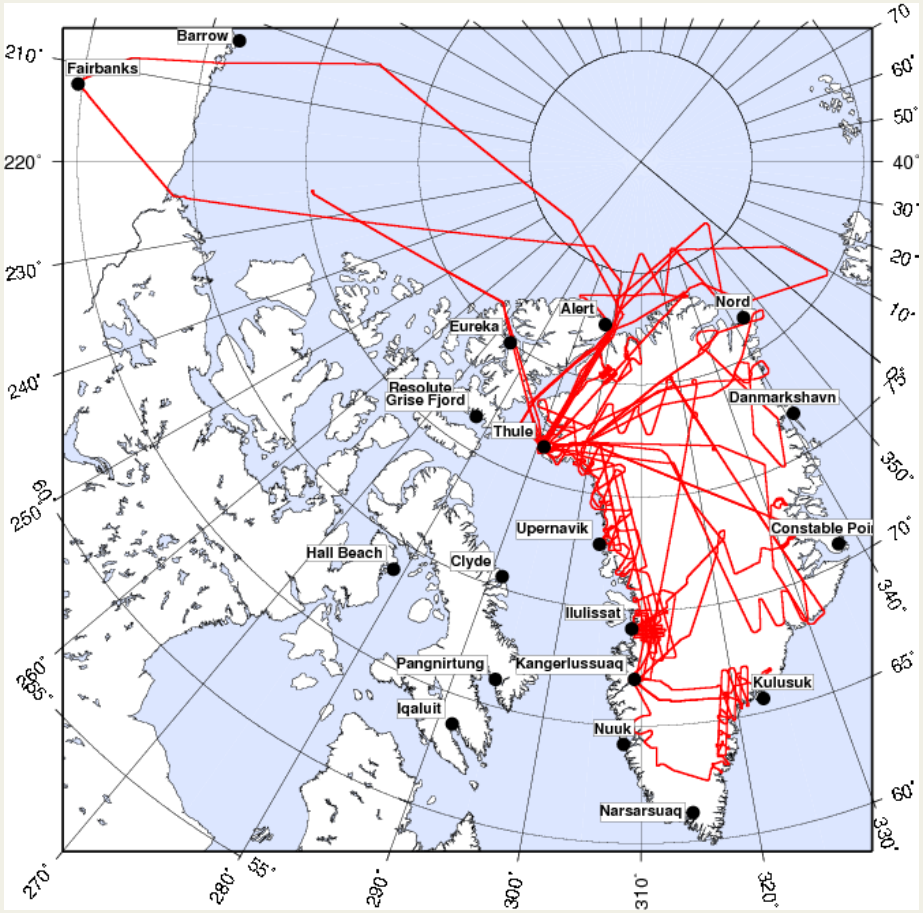
4) In conjunction with altimetry measurements, collect other remotely sensed data to improve predictive models of sea level rise and sea ice cover

P-3 Instruments

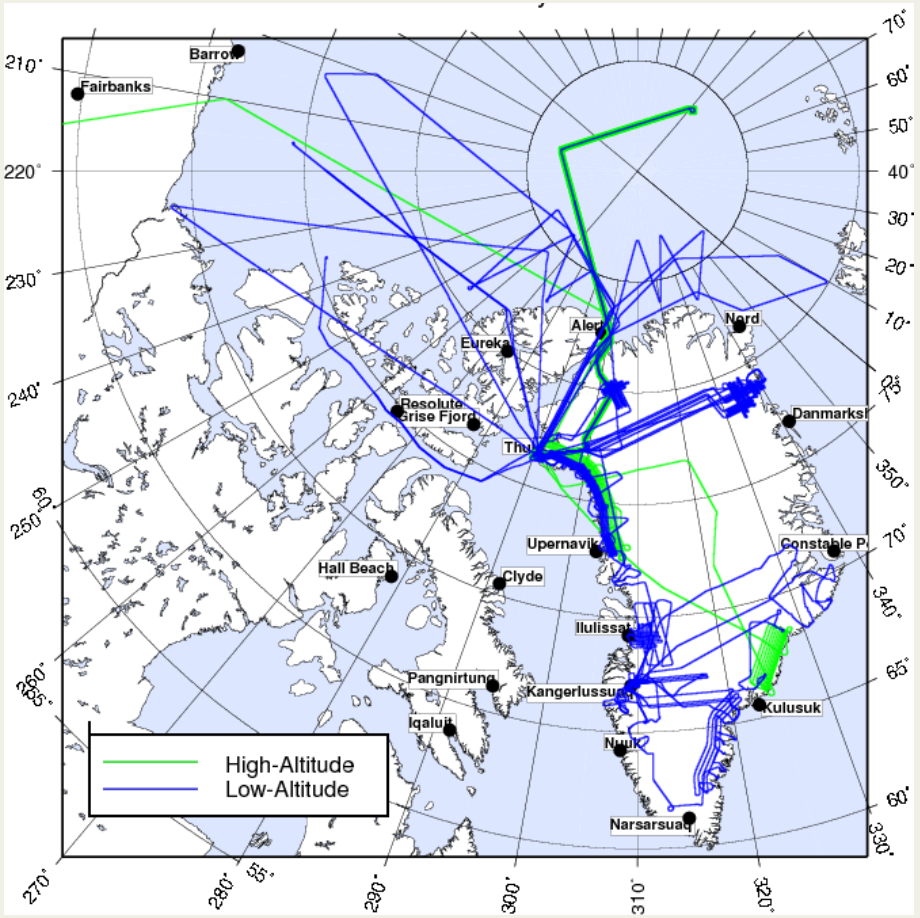
Instruments on Board:

- ATM
- CReSIS radar suite
  - Ku altimeter
  - Snow radar
  - Accumulation radar
  - MCORDS-Outlet Glacier
- Gravimeter
- DMS

Greenland Flight Lines



2009



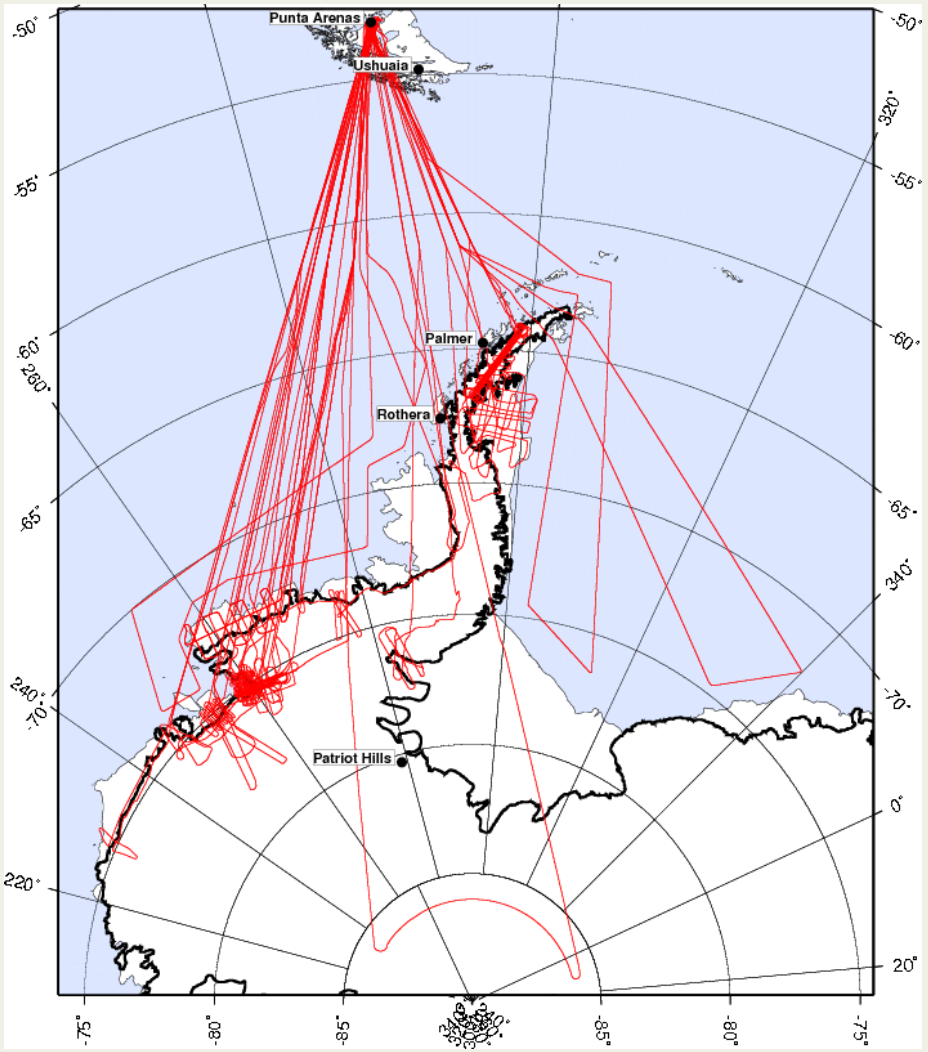
2010

DC-8 Instruments

Instruments on Board:

- ATM
- LVIS
- CReSIS radar suite
  - Ku altimeter
  - Snow radar
  - MCORDS
- Gravimeter
- DMS

Antarctica Flight Lines

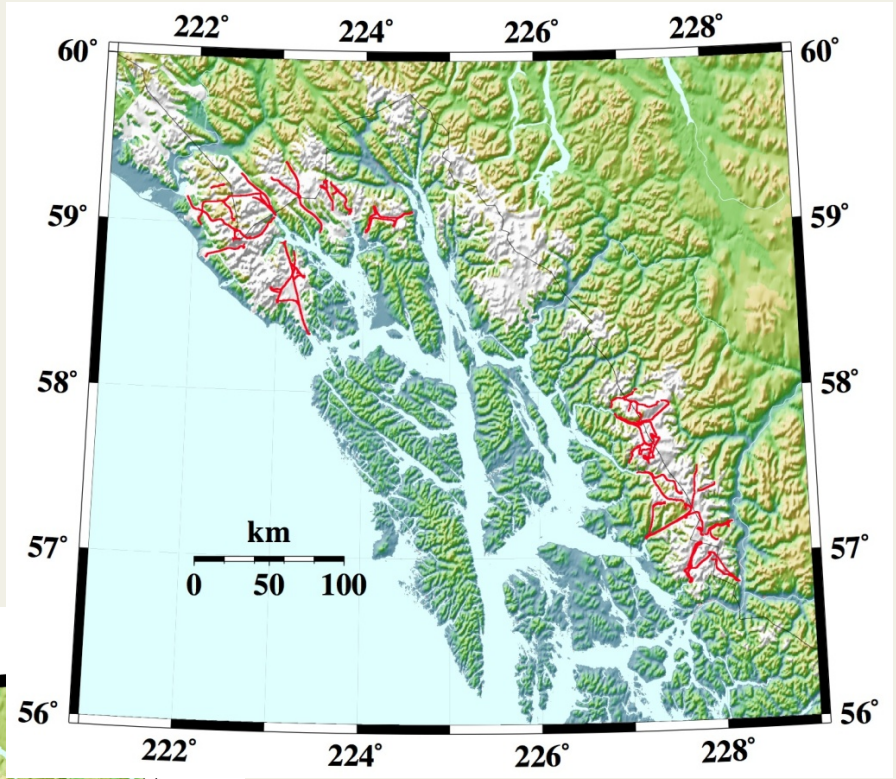


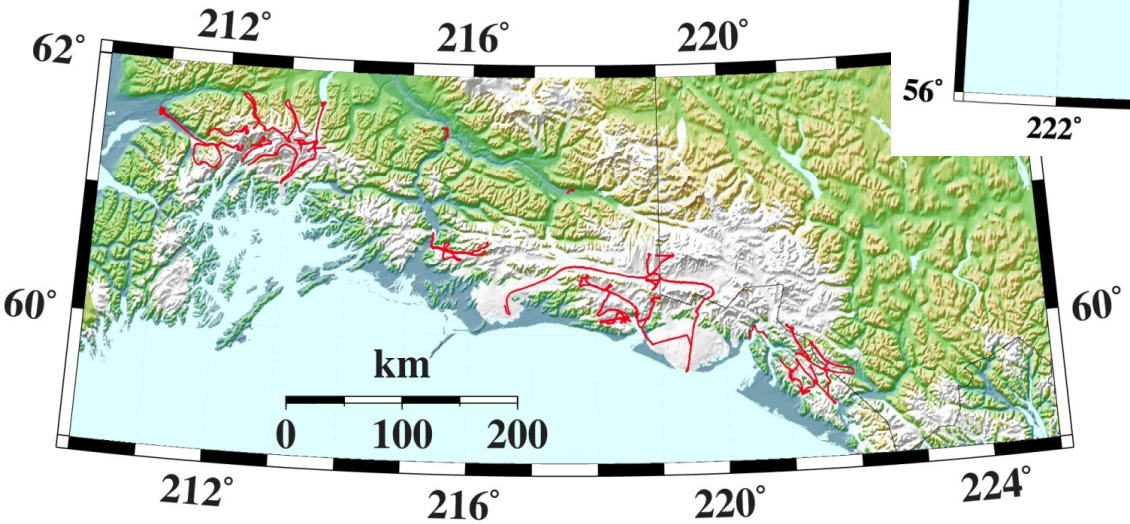
2010

Alaska Flight Lines

Instruments:

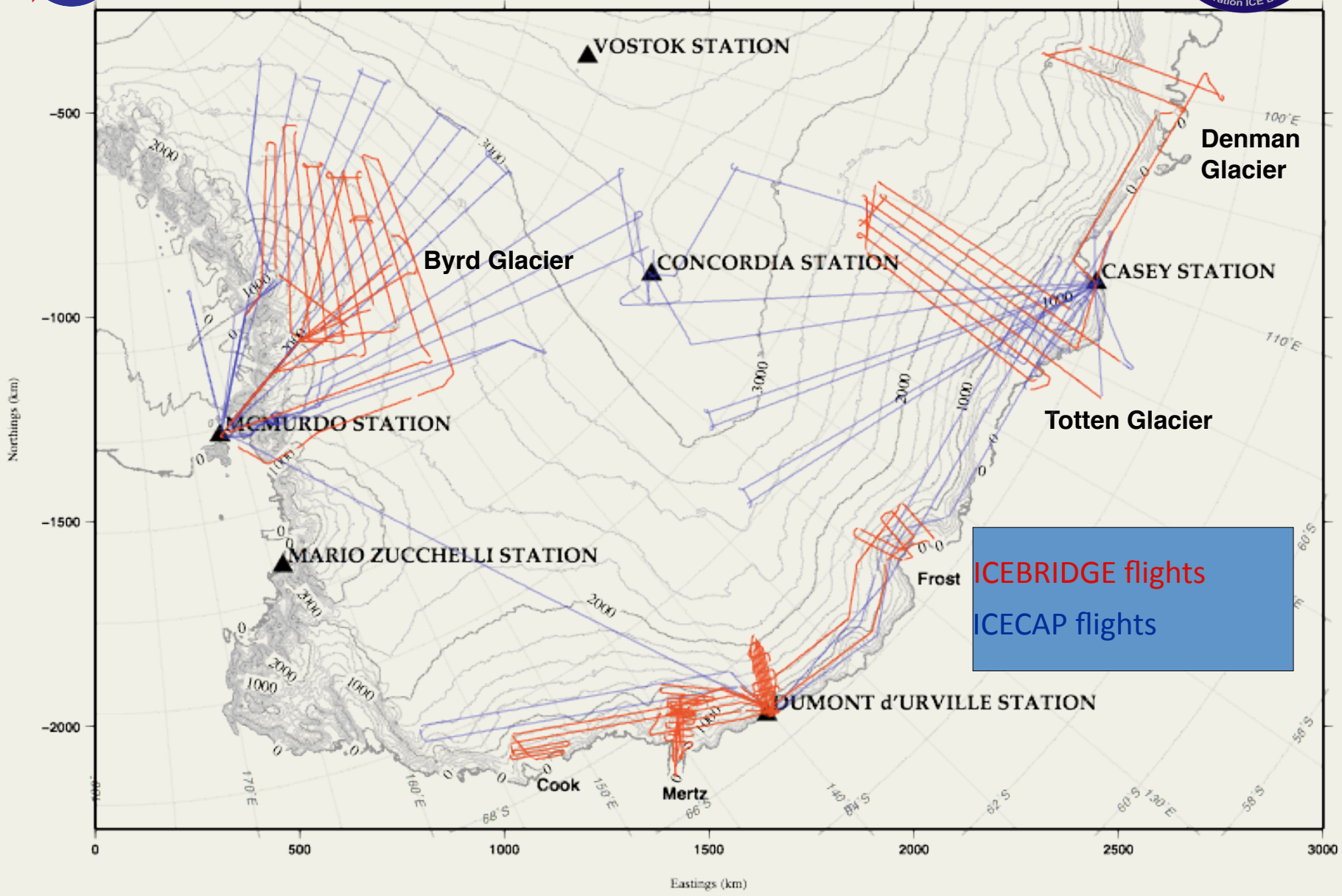
- UAF laser Altimeter



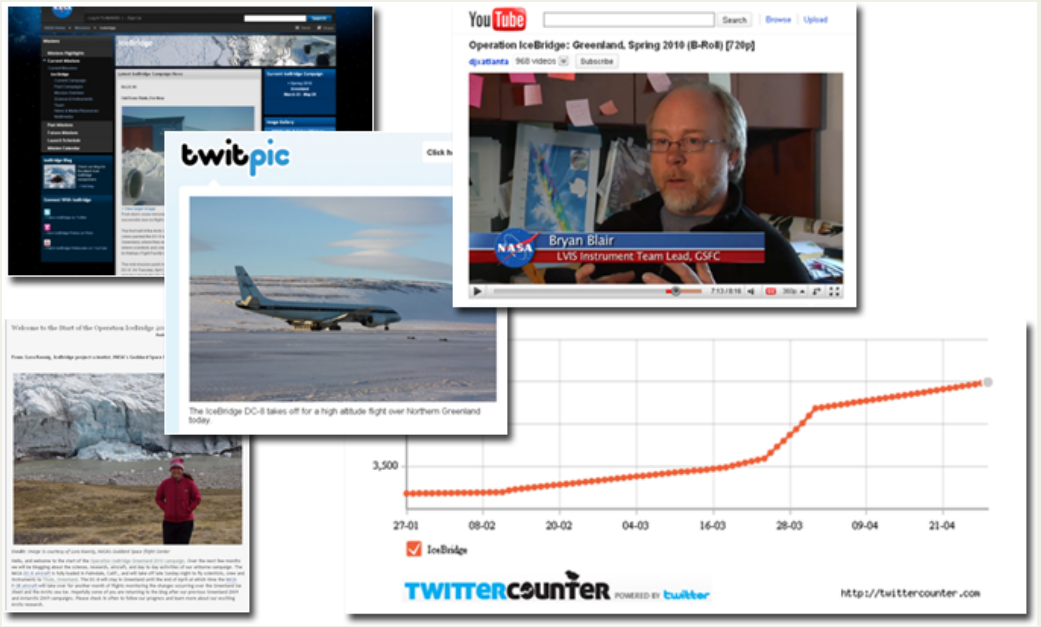


Spring 2009
IceBridge

IceCap/IceBridge Flights 2009-10



Operation IceBridge



Multimedia and online resources

Mission Page
www.nasa.gov/icebridge
Earth Science Project Office
www.espo.nasa.gov/oib
Videos and Animations
http://svs.gsfc.nasa.gov/Gallery/OperationIceBridgeSpring2010.html

Twitter
www.twitter.com/icebridge
Mission Blog Videos and Animations
http://blogs.nasa.gov/cm/blog/icebridge

Meeting Goals

- Present IceBridge data from Antarctica 2010
  - Status of data processing
  - Update on data transfer to NSIDC/Community release
- Present the Antarctica 2010 campaign schedule and logistics
- Establish Antarctica 2010 flight line plan based on science objectives and community input

Operation IceBridge
Antarctica 2010 Campaign
Flight Logistics and Schedule

Tentative Schedule

- Oct 11, 2010 Deploy DC-8 to Punta Arenas from Palmdale, CA
- Nov 22, 2010 Return to Palmdale, CA
- 170 Total Flight Hours
  - **140 science flight hours or 14 flights**

DC-8 Instruments

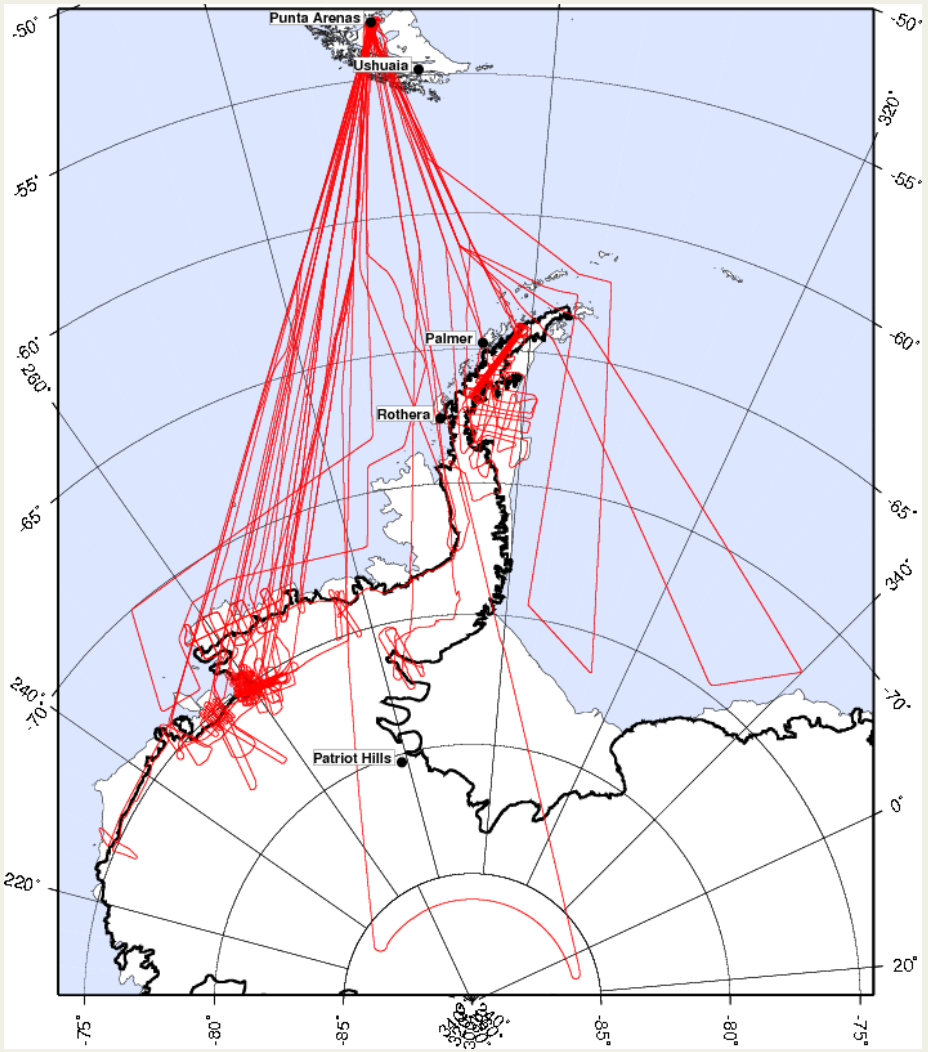
Instruments on Board:

- ATM
- LVIS
- CReSIS radar suite
  - Ku altimeter
  - Snow radar
  - MCORDS
- Gravimeter
- DMS

Flight Types

- High Temporal Monitoring
  - Areas that should be monitored every year
- High Resolution Grids
  - Areas important for modeling
- High Altitude
  - LVIS flights
- Exploratory
- Bed Mapping
- Calibration
  - Ground validation

Sea Ice Transit Flight Lines



Break-Out Session Goals

- Sea Ice
  - Plan 4-6 flights (40-60 flight hours)
  - Prioritize by science objectives
    - Low, Medium, High priority
  - Prioritize instruments
  - Designate LVIS flight and transit targets
- Ice Sheet
  - Plan 10-12 flights (100-120 flight hours)
  - Prioritize by science objectives
    - Low, Medium, High priority
  - Prioritize instruments
  - Designate LVIS flights